

**REMARKS**

Applicant gratefully acknowledges the Examiner's determination that claims 22-26 contain allowable subject matter (Office Action, dated June 29, 2004, page 9, lines 8-10).

Claims 3, 4, 9, 15, 16, 19 and claims 22-28 have been canceled without prejudice. Claims 1, 13, 20 and 21 have been amended, and new claims 29-31 have been added. Specifically, independent claims 1 and 13 have been amended, respectively, to incorporate the allowable subject matter of dependent claims 22 and 24. Therefore, claims 1 and 13 have been amended to have the same scope as dependent claims 22 and 24, respectively.

Independent claims 20 and 21 have been amended, respectively, to incorporate the subject matter of dependent claims 9 and 19. Therefore, claims 20 and 21 have been amended to have the same scope as dependent claims 9 and 19, respectively.

New independent claim 29 corresponds to dependent claim 23 written in independent form incorporating the subject matter of base claim 1. Therefore, new claim 29 has the same scope as claim 23.

New independent claim 30 corresponds to dependent claim 25 written in independent form incorporating the subject matter of base claim 13. Therefore, new claim 30 has the same scope as claim 25.

New independent claim 31 corresponds to dependent claim 26 written in independent form incorporating the subject matter of base claim 1. Therefore, new claim 31 has the same scope as claim 26.

The present amendment adds no new matter to the instant application and raises no new issues.

**The Invention**

The present invention pertains broadly to a display assembly, such as would be used in a timepiece, having two superposed display devices for displaying information by inverting the

contrast of all or part of the information displayed between the two display devices. Specifically, in a first embodiment in accordance with the present invention, a display assembly with two superposed contrast inversion display devices is claimed having all of the features recited in claim 1. In accordance with a second embodiment of the invention, a display assembly with two superposed contrast inversion display devices is claimed having all of the features recited in claim 13. In accordance with a third embodiment of the invention, a display assembly with two superposed contrast inversion display devices is claimed having all of the features recited in claim 29. In accordance with a fourth embodiment of the invention, a display assembly with two superposed contrast inversion display devices is claimed having all of the features recited in claim 30. In accordance with a fifth embodiment of the invention, a display assembly with two superposed contrast inversion display devices is claimed having all of the features recited in claim 31.

In accordance with sixth and seventh embodiments of the present invention, a display assembly with two superposed contrast inversion display devices is claimed having all of the features recited in claims 20 and 21, respectively, wherein “the digital part of the first display device and the second display device have the same structure.”

Various other embodiments in accordance with the present invention are the subject of the dependant claims. One advantage of the embodiments in accordance with the present invention is that a display assembly, such as would be used in a timepiece, is provided that has two superposed display devices that display dark indicia on a light background or light indicia on a dark background thereby providing an aesthetically pleasing and easy to read information display of various data, such as time data and the like.

Furthermore, an advantage of the sixth and seventh embodiments of the present invention is that the digital part of the first display device and the second display device are the same, so the aesthetic advantages provided by the second display device are also provided by the digital part of the first display device thereby creating new and interesting visual effects.

**The Rejection**

Claims 1, 4, 8, 10-13, 16, 18, 20, 21, 27 and 28 stand rejected under 35 U.S.C. 103(a) as unpatentable over “Applicant’s admitted prior art” (hereafter abbreviated “AAPA,” see Applicant’s specification, page 1, line 16 to page 5, line 2; and Figure 1A) in view of Wang et al. (U.S. Patent 5,726,723). Claims 2, 3, 9, 14, 15 and 19 stand rejected under 35 U.S.C. 103(a) as unpatentable over Applicant’s admitted prior art (AAPA) in view of the Wang Patent, and further in view of Masafumi et al. (EP 0930522).

Applicant respectfully traverses the rejection and requests reconsideration of the application for the following reasons.

**Applicant’s Arguments**

Claims 1 and 13 have been amended to include, respectively, the allowable subject matter of claims 22 and 24. Therefore, claims 1 and 13 are in condition for allowance for the reasons of record. Claims 2, 8, 10-12, 14 and 18 depend either directly or indirectly on either claim 1 or claim 13 and are likewise allowable.

New independent claims 29 through 31 correspond to claims 23, 25 and 26 rewritten in independent form incorporating the subject matter of the respective base claim. Therefore, claims 23, 25 and 26 are in condition for allowance for the reasons of record.

**The Remaining Prior Art Rejection**

A proper 35 U.S.C. § 103 obviousness analysis requires (a) determining the scope and content of the prior art, (b) ascertaining the differences between the prior art and the claims at issue, (c) resolving the level of ordinary skill in the pertinent art, and (d) considering secondary factors in order to determine the obviousness or nonobviousness of the claimed subject matter. Graham v. John Deere Co. of Kansas City, 148 U.S.P.Q. 460, 467 (1966). When determining the scope and content of the prior art, prior art must be given a fair reading as a whole. In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). Lastly, a prima facie §103 rejection additionally

requires that the examiner show (1) that the prior art would have suggested to those of ordinary skill in the art that they should make the claimed device, (2) that the prior art also would have revealed that in so making those of ordinary skill would have a reasonable expectation of success, and (3) that both the suggestion and the reasonable expectation of success are grounded in the prior art and not in the Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

#### **Applicant's Admitted Prior Art**

The Applicant's specification discusses the background of the invention from page 1, line 3 to page 5, line 2. In this discussion, Applicant discusses prior art display assemblies as shown in Figures 1A, 2A, 2B and 2C. Applicant also discusses "modifications which may be made to the display assembly of the prior art" (page 6, lines 21-22); however, the embodiments shown in Figures 3A, 3B, 4A, 4B, 5A and 5B are not admitted to be prior art or obvious to those skilled in the art. Applicant's characterization of the subject matter of Figures 3A, 3B, 4A, 4B, 5A and 5B as "modifications which may be made to the display assembly of the prior art" does not communicate that such modifications have, in fact, been made, or that they are taught by the prior art. The discussion related to Figures 3A, 3B, 4A, 4B, 5A and 5B is solely intended to point out that further modifications leading to the subject matter of the presently claimed invention would not have been obvious.

The object of the present invention is to provide a display assembly that includes two superposed display devices allowing an inversion of contrast of one of the displays without increasing energy requirement and without requiring a complex polarizer drive (present specification, page 5, lines 3-7). The presently claimed invention does not permit the presence of a polarizer or any other structure between the display cell and the optical valve, and each of the independent claims 20 and 21 specifically recite that the "first contrast inversion device and the second contrast inversion display device are superposed."

Specifically, the instant specification defines that "[t]he actual construction of the two superposed display devices...corresponds to what was already described with reference to Fig 1A,

with the exception of intermediate polariser 42 which has been omitted (page 7, lines 3-6, emphasis added).” All of the embodiments shown in Figures 6-10 show display cell (26) superposed on optical valve (28) with no polarizer disposed in between.

Applicant’s use of the term “superpose” to describe the patentable relationship between the two contrast inversion display devices is adequately described in the instant specification on page 7, lines 3-6, and is consistent with the meaning of the word. Specifically, one definition of “superpose” is one upon another (Random House Webster’s college dictionary, 1991, page 1341). The word “upon” communicates the positional relationship “in or into complete or approximate contact with” (Random House Webster’s college dictionary, 1991, page 1456). In all of the prior art devices discussed in the present specification, a polarizer is disposed between the display cell and the optical valve. With this structure, it is not possible for the display cell to contact, or approximately contact, the optical valve because there is a barrier (i.e., the polarizer) in between. Therefore, given (a) the above definition of “superpose” provided by the Random House Webster’s college dictionary (b) the definition of “superposed display devices” reasonably described in the specification (page 7, lines 3-6) and (c) as shown in Figures 6-10, it is clear that the phrase “two superposed contrast inversion display devices” recited in claims 20 and 21 does not allow for a polarizer to be interposed between the two contrast inversion display devices.

All of the embodiments shown in Figures 1A, 2A, 2B, and 2C of the AAPA include a polariser (42) sandwiched between a display cell (26) and an optical valve (28). The display cell (26) and the optical valve (28) are of the positive anisotropy twisted nematic type (See instant specification, page 2, lines 30-31). Applicant contends that the AAPA does not teach, or even suggest, that the “first contrast inversion device and the second contrast inversion display device are superposed,” as recited in claims 20 and 21 because of the presence of the intervening polariser (42). Furthermore, the Examiner indicates that the AAPA does not teach, or even suggest, that “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21 of the present invention (Office Action, dated June 29, 2004, page 8, lines 19-20).

**Applicant's Arguments Regarding the Wang Patent**

The Wang Patent discloses a sub-twisted nematic liquid crystal display (SBTN-LCD) in Figure 12 that is configured for transmissive mode operation (col. 5, lines 26-28). Specifically, the Wang Patent teaches that the SBTN-LCD has a double LCD configuration with sub-twisted nematic liquid crystals (SBTN). These SBTNs must have a twist angle of less than  $90^\circ$  (i.e., approximately between  $46^\circ$  and  $89^\circ$ , and preferably about  $55^\circ$ ) so as to avoid the need for dopants (col. 3, lines 55-56, and col. 5, lines 51-60). Those skilled in the art would recognize that an SBTN acts as a retardation plate wherein  $\Delta n \cdot d = \lambda/2$ . On the other hand, as recited in claims 20 and 21, the liquid crystals used in the present invention are of the "twisted nematic" type. The present specification describes conventional twisted nematic liquid crystals for the display cell and the optical valve because a  $90^\circ$  rotation (i.e., twist angle) is described for these structures (See instant specification, page 7, line 34 to page 8, line 22). Those skilled in the art would know that twisted nematic liquid crystals do not function as a retardation plate; instead, they operate as a waveguide wherein  $\Delta n \cdot d \gg \lambda/2$  (Mauguin's conditions).

Thus, the Wang Patent does not teach, or even suggest, "twisted nematic" liquid crystals such as are recited in claims 20 and 21 of the present invention. In fact, as discussed above, the Wang Patent expressly teaches away from the use of twisted nematic liquid crystals (See Wang Patent, col. 5, lines 51-60).

As shown in Figure 12 of the Wang Patent, the SBTN-LCD display includes two substantially identical liquid crystal layers (132), (134) separated by a control glass plate (135) and having "opposite sense of twist" (col. 12, lines 61-67). The device shown in Figure 12 of the Wang Patent operates in a "transmission mode" contrary to the devices shown in Figures 2, 10 and 11 and does not include the reflective layer (44), (84), (124) provided in the devices shown in Figures 2, 10 and 11, respectively. Consequently, the device shown in Figure 12 of the Wang Patent is not a "contrast inversion display device" as recited in claims 20 and 21 of the present invention because this device of the Wang Patent does not utilize light reflected from a first

display device. In addition, the polarizers (144) and (148) are both absorbent polarizers (col. 13, lines 21-32).

There is no teaching in the Wang Patent to suggest adding a back reflective element to the double LCD configuration shown in Figure 12. In fact, a person of skill in the art would realize that it would be ineffective and nonsensical to do so. On the other hand, the structure of the present invention as claimed in claims 20 and 21 uses two display devices in a coordinated manner to provide the rear portion of the display assembly (i.e., the first display device and back polarizer) with the properties of a reflective polarizer. More particularly, as recited in claim 20 of the present invention, when the first display device has a dark shade, a reflective back polarizer is used. When the first display device has a light shade, then an absorbent polarizer is used and the first display device serves as a reflective surface.

As indicated by the Examiner (Office Action, dated June 29, 2004, page 8, lines 19-20), the Wang Patent also does not teach, or even suggest, that “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21 of the present invention.

In summary, the Wang Patent does not teach, or even suggest, (a) “contrast inversion display devices,” (b) “twisted nematic” liquid crystals, and (c) “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21.

#### **Applicant’s Arguments Regarding The Masafumi et al. Reference**

The Masafumi et al. reference discloses a “liquid crystal display” device comprising a first liquid crystal cell (16) and a second liquid crystal cell (18), made up of a liquid crystal layer sealed in a gap between a pair of transparent substrates having an electrode formed on each of the inner surfaces thereof, facing each other and disposed in that order from the visible side, with an absorption-type polarizing film (12) disposed on the visible side of the first liquid crystal cell (16) and a reflection-type polarizing film (14) disposed on a side of the second liquid crystal cell (18), see Abstract. The liquid crystal cells are preferably twisted nematic liquid crystals, and may have

a twist angle of 90° (col. 3, lines 36-40, and col. 6, lines 18-20). However, the display device disclosed by Masafumi et al. does not teach, or even suggest a “display assembly with two superposed contrast inversion display devices” as recited in claims 20 and 21. In fact, the Masafumi et al. reference teaches that the first liquid crystal display cell (16) and the second liquid crystal cell (18) are disposed such that the display regions of the respective liquid crystal cells are “superimposed” on each other (col. 5, lines 6-10). As shown in Figure 1, these structures are not “superposed” cells in accordance with the present invention because there is nothing in the reference to teach, or even suggest, that they are in contact or in approximate contact with one another. As suggested by Figure 1, Masafumi et al. schematically illustrate that cells (16) and (18) are separated from each other and are not in contact or in approximate contact.

In addition, the Masafumi et al. reference teaches that “a conventional liquid crystal display panel used in electronic equipment other than a timepiece” can include an “inverse mode” (col. 1, line 58, to col. 2, line 22) and describes the operation of the “inverse mode” that those skilled in the art would recognize as the “inverse addressing” referred to in the present specification (page 3, lines 20-27). In accordance with the discussion of inverse addressing in the present specification, Masafumi et al. also point out that the “inverse mode” is not suitable for portable devices such as timepieces. Consequently, the Masafumi et al. reference stands in support of the proposition that those skilled in the art would not apply inverse addressing to a timepiece.

The Examiner also indicates that the Masafumi et al. reference does not teach, or even suggest, that “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21 of the present invention (Office Action, dated June 29, 2004, page 8, lines 19-20).

In summary, Applicant contends that the Masafumi et al. reference does not teach, or even suggest, “two superimposed contrast inversion display devices” and that “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21 of the present application.



**Summary of the Prior Art**

The AAPA teaches a display apparatus that includes a polariser sandwiched between a display cell and an optical valve. The display cell and the optical valve may be twisted nematic type liquid crystal cells of positive anisotropy. However, the AAPA does not teach “two superposed contrast inversion display devices” and the reference does not teach that “the digital part of the first display device and the second display device have the same structure.”

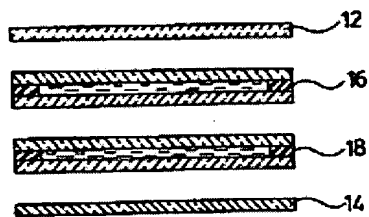
The Wang Patent teaches an SBTN-LCD display that includes a double LCD configuration wherein no polariser is located between two adjacent sub-twisted nematic liquid crystals. The double LCD configuration transmits light and is provided with two absorbent polarisers, but the double LCD configuration does not operate to provide contrast inversion. Therefore, the Wang Patent does not teach, or even suggest, “two superposed contrast inversion display devices.” The Wang Patent also does not teach that a “the digital part of the first display device and the second display device have the same structure,” as acknowledged by the Examiner (Office Action, dated June 29, 2004, page 8, lines 19-20), because the Wang Patent teaches merely a display for a wristwatch or a notebook computer color display (col. 1, lines 5-14) and is completely silent with respect to a “display assembly including...a first display device... and a second active display device having a double structure, one structure being formed by a first contrast inversion display device...and the other structure being formed by a second contrast inversion device” as recited in claims 20 and 21.

In other words, the Wang Patent is directed solely to a “double LCD configuration” as shown in Figure 12. If, *arguendo*, the double LCD configuration were construed to be a “second active display device having a double structure” using two substantially identical liquid crystals as suggested by the Examiner (Office Action, dated June 29, 2004, page 13, lines 6-9), the Wang Patent would plainly fail to teach, or even suggest, any “first display device.” Thus, it is even more strongly evident that the Wang Patent does not teach, or even suggest, that the “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21.

The Masafumi et al. reference teaches a liquid crystal display that includes superimposed liquid crystal cells that are otherwise separated from one another. The two liquid crystal cells are therefore not “superposed” in accordance with the present invention. The Examiner asserts that the superimposed structure taught by the Masafumi et al. reference would have cells (16) and (18) in contact with each other when the device assembly is finished as taught by Figure 1 and col. 5, lines 6-16 (Office Action, dated June 29, 2004, page 13, lines 3-5). The Examiner has mischaracterized the teachings of the Masafumi et al. reference as evinced below.

When determining the scope and content of the prior art, the courts have required that prior art must be given a fair reading as a whole. In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). Figure 1 of the Masafumi et al. reference is reproduced below.

FIG. 1



Plainly, as shown in Figure 1 of the Masafumi et al. reference, cells (16) and (18) are not “in contact” with each other as the Examiner contends.

Col. 5, lines 6-16, of the Masafumi et al. reference is reproduced as follows:

“[0034] As shown in Fig. 1, with the liquid crystal display device, a first liquid crystal cell 16 and a second liquid crystal cell 18 are disposed such that display regions of the respective liquid crystal cells are superimposed on each other, and an absorption-type polarizing film 12 is disposed on the visible side of the first liquid crystal cell 16, which is disposed on the visible side (the upper side in the figure of the cell) of the cell. Further, a reflection-type polarizing film 14 is disposed on a side of the second liquid crystal cell 18 opposite from the visible side” (emphasis added).

The text of col. 5, lines 6-16, of the Masafumi et al. reference does not teach, or even suggest, cell (16) would be in contact with cell (18) when the display device is assembled. The Masafumi et al. reference reasonably would suggest to a person of ordinary skill in the art that

Figure 1 schematically illustrates the positional relationship between cell (16) and cell (18) when assembled in the liquid crystal display device. No contact between cells (16) and (18) is expressly stated, or implied. In fact, the term “superimposed” would reasonably mean that cell (16) is placed “over or above” the cell (18), (See Webster’s new collegiate dictionary, 1977, page 1169, defining “superimpose” as “to place or lay over or above something”). Nothing in the definition of the word “superimpose” explicitly or implicitly teaches physical contact between objects.

Therefore, it would be evident to a person skilled in the art, that Figure 1 and col. 5, lines 6-16, of the Masafumi et al. reference teaches a cell (16) disposed over or above cell (18), wherein cells (16) and (18) would be separated by some substantial space. There is nothing in the Masafumi et al. reference that teaches, or even suggests, cells (16) and (18) are in contact, or in approximate contact, with one another (i.e., superposed).

Furthermore, the Masafumi et al. reference teaches an “inverse mode” that those skilled in the art would recognize is inverse addressing. Inverse addressing is not contrast inversion and the Musafumi et al. reference explicitly teaches that the “inverse mode” is not suitable for use in portable timepieces. Thus, the Musafumi et al. reference does not teach, or even suggest, “two superposed contrast inversion display devices.” The Musafumi et al. reference also does not teach that a “the digital part of the first display device and the second display device have the same structure.”

### **The Combination of the Prior Art**

Application of the four prong test of Graham to the AAPA, the Wang Patent and the Musafumi et al. reference reveals that the scope and content of these three prior art references fails to teach, or even suggest, (i) “two superposed contrast inversion display devices” and (ii) that “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21.

In particular, the Examiner has used the Masafumi et al. reference to teach that two contrast inversion display devices would be superposed. However, as shown above, the Masafumi

et al. reference reasonably teaches superimposed cells and not superposed cells. Also, the Masafumi et al. reference teaches cells for inverse addressing, and not cells for contrast inversion.

Secondly, the Examiner admits that the hypothetical construct created by the combination of the AAPA, the Wang Patent, and the Masafumi et al. reference fails to teach that “the digital part of the first display device and the second display device have the same structure” as recited in claims 20 and 21 (Office Action, dated June 21, 2004, page 8, lines 19-20). Consequently, the Examiner’s combination of these three references fails under Section 103 for multiple reasons.

First, the scope and content of the prior art is insufficient to teach all of the features of the claimed invention; therefore, the Examiner’s Section 103 rejection fails to satisfy the first prong of the Graham test. Graham v. John Deere Co. of Kansas City, 148 U.S.P.Q. 460, 467 (1966). Second, the prior art necessarily fails to reveal that in so making a device taught by the AAPA, the Wang Patent, and the Masafumi et al. reference, those of ordinary skill would have a reasonable expectation of success of arriving at Applicant’s claimed invention; therefore, the Examiner’s prior art rejection lacks a proper suggestion to combine. See In re Vaeck, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Instead, it is clear the Examiner has used Applicant’s claimed invention as an instruction manual, picking and choosing among isolated prior art disclosures to deprecate the claimed invention, which is an impermissible use of hindsight. In re Fritch, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992).

#### **Improper Use of “Common Knowledge”**

With respect to claims 20 and 21, which presently incorporate the subject matter of claims 9 and 19, respectively, the Examiner asserts that constructing a display assembly so that “the digital part of the first display device and the second display device have the same structure” would simplify manufacturing and, therefore, be obvious (Office Action dated December 3, 2003, page 8, lines 16-21; Office Action, dated June 29, 2004, page 9, lines 1-6). However, the Examiner provides no teaching grounded in the prior art to support his conclusion.

The Federal Circuit has ruled that the Administrative Procedures Act requires “reasoned decisionmaking” that is based on the evidence of record. In re Lee, 61 U.S.P.Q.2d 1430, 1433 (Fed. Cir. 2002). In this case, the Examiner has not provided evidence, in the form of a prior art reference or otherwise, to support his bare conclusion as to what would be obvious. Applicant has traversed the Examiner’s contention with respect to what the “general available knowledge” in the art entails, and has previously demanded that the Examiner either provide evidence, such as a prior art reference, to support his conclusion in accordance with Lee, 61 U.S.P.Q.2d at 1433, or withdraw his rejection of claims 20 and 21. (See Amendment (D), filed June 2, 2004, page 27, line 23, to page 28, line 8).

The Examiner has not provided any prior art reference in support of his bare conclusion of what the prior art teaches. The Examiner is required to provide a prior art reference, or some other evidence, in support of his conclusion of what is “general available knowledge” in the art. See In re Zurko, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

Lastly, the Federal Circuit has ruled that where numerous prior art references are used in support of an obviousness rejection under 35 U.S.C. § 103(a), all of the claim elements must appear in the prior art in the same configurations, serving the same functions, to achieve the same suggested results. In re Gorman, 18 U.S.P.Q.2d 1885, 1889 (Fed. Cir. 1991).

In the present case, the Examiner has relied upon three reference to create a hypothetical construct that does not include all of the claimed elements, in the same configurations, serving the same functions to achieve the same results as the elements recited in Applicant’s claims 20 and 21. In view of the rule established in Gorman, Applicant contends that because the Examiner’s prior art rejection relies upon numerous references, yet still fails to fairly teach all of the claimed subject matter, the Section 103 rejection is untenable and must be withdrawn. In other words, despite using numerous prior art references, the Examiner still must reach out to an undefined “general available knowledge” for suggestion to further modify his hypothetical construct in order to argue Applicant’s claimed invention is obvious. Applicant contends that when numerous prior art

references are used in a Section 103 rejection, it is impermissible for the Examiner to fill in the gaps with allegations of what would be commonly known in the art.

### **Conclusion**

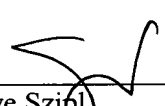
Claims 1, 2, 8, 10-14, 18 and 29-31 are allowable for the reasons of record. Furthermore, Applicant has shown that the Examiner's rejection under 35 U.S.C. § 103 of claims 20 and 21 is untenable and should be withdrawn because all combinations of the Applicant's Admitted Prior Art, the Wang Patent, and the Musafumi et al. reference would still fail to teach, or even suggest, (i) "two superposed contrast inversion display devices" and that (ii) "the digital part of the first display device and the second display device have the same structure" as recited in claims 20 and 21.

For all of the above reasons, claims 1, 2, 8, 10-14, 18, 20, 21 and 29-31 are in condition for allowance and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney of record for the Applicant.

Respectfully submitted,

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**superficial** \sü-pär-'fish-əl\ *adj* [ME, fr. LL *superficialis*, fr. L *superficies*] 1 a (1): of or relating to a surface (2): lying on, not penetrating below, or affecting only the surface < wounds> 1b of a unit of measure: SQUARE < foot> 2 a: concerned only with the obvious or apparent: SHALLOW b: lying on the surface < EXTERNAL c: presenting only an appearance without substance or significance — **superficial-ly** \-'fish-(ə)-lē\ *adv* — **superficial-ness** \-'fish-əl-nəs\ *n*

**syn** SUPERFICIAL SHALLOW, CURSORY, UNCRITICAL *shared meaning* — **element**: lacking in depth, solidity, and comprehensiveness *ant* radical

**superficial fascia** *n*: the thin layer of loose fatty connective tissue underlying the skin and binding it to the parts beneath — called also *hypodermis*

**superficial-ity** \sü-pär-'fish-ē-'al-ə-tē\ *n*, *pl* -ties 1: the quality or state of being superficial 2: something superficial **superficial-ness** \-'fish-(ē)-ē-'nəs\ *n*, *pl* superficialities [L, surface, fr. *super* + *facies*, face, aspect — more at FACE] 1: a surface of a body or a region of space 2: the external aspects or appearance of a thing

**superfine** \sü-pär-'fin\ *adj* 1: overly refined or nice 2: of extremely fine size or texture < toothbrush bristles> < sugar> 3: of high quality or grade — used esp. of merchandise **superfix** \sü-pär-'fiks\ *n* [*super* + *fix* (as in *prefix*)] a recurrent predictable pattern of stress that characterizes small stretches of speech whose constituents are parallel in relationship **superfluid** \sü-pär-'flü-id\ *n*: matter in a unique state characterized by extraordinarily large thermal conductivity and capillarity — **superfluid-ity** \-'flü-'id-ē-tē\ *n*

**superfluity** \sü-pär-'flü-ə-tē\ *n*, *pl* -ities [ME *superfluitas*, fr. MF *superfluit*, fr. LL *superfluitas*, fr. L *superfluitas*] 1 a: EXCESS, OVERSUPPLY b: something unnecessary or superfluous 2: immoderate and esp. luxurious living, habits, or desires **superfluous** \sü-pär-'flü-əs\ *adj* [ME, fr. L *superfluitas*, lit., running over, fr. *superfluere* to overflow, fr. *super* + *fluere* to flow — more at FLUID] 1: exceeding what is sufficient or necessary — **EXTRA** 2 obs: marked by wastefulness: EXTRAVAGANT — **superfluously** *adv* — **superfluosity** \sü-pär-'flü-ə-si\ *n*

**super-galaxy** \sü-pär-'gal-ək-sē\ *n*: a large cluster of galaxies **super-gene** \sü-pär-'jē-n\ *n*: a group of linked genes acting as an allelomorphous unit esp. when due to the suppression of crossing over

**super-giant** \sü-pär-'ji-ənt\ *n*: a star of very great intrinsic luminosity and enormous size

**super-heat** \sü-pär-'het\ *vt* 1 a: to heat (a liquid) above the boiling point without converting into vapor b: to heat (a vapor) not in contact with its own liquid so as to cause to remain free from suspended liquid droplets < ed steam> 2: OVERHEAT < ed protest> — **super-heat-er** *n*

**super-heat** \sü-pär-'het\ *n*: the extra heat imparted to a vapor in superheating it from a dry and saturated condition; also: the corresponding rise of temperature

**super-heterodyne** \sü-pär-'het-ə-'rə-dīn\, 'he-trə\ *adj* [*super* + *heterodyne*]: of or relating to a form of beat reception in which beats are produced of a frequency above audibility but below that of the received signals and the current of the beat frequency is then rectified, amplified, and finally rectified again so as to reproduce the sound

**superheterodyne** *n*: a radio set for superheterodyne reception **super-high frequency** \sü-pär-'hi\ *n*: a radio frequency in the next to the highest range of the radio spectrum — see RADIO FREQUENCY table

**super-high-way** \sü-pär-'hi-wā\ *n*: a broad arterial highway (as an expressway or turnpike) designed for high-speed traffic

**super-hu-man** \sü-pär-'hyü-mən\, 'yü-əd\ *adj* 1: being above the human: DIVINE < beings> 2: exceeding normal human power, size, or capability: HERCULEAN < a ~ effort> — **super-hu-man-ity** \-'hyü-mən-ə-tē\, 'yü-əd\ *n* — **super-hu-man-ly** \-'hyü-mən-lē\, 'yü-əd\ *adv* — **super-hu-man-ness** \-'mən-nəs\ *n*

**super-im-pose** \sü-pär-'im-pōz\ *vt*: to place or lay over or above something — **super-im-pose-able** \-'pō-z-ə-bəl\ *adj* — **super-im-pose-ment** \-'rim-pō-zh-mənt\ *n*

**super-in-cum-bent** \-'rīn-'kəm-bənt\ *adj* [L *superincumbens*, *superincumbens*, prp. of *superincumbere* to lie on top of, fr. *super* + *incumbere* to lie down — more at INCUMBENT]: lying or resting and usu. exerting pressure on something else — **super-in-cum-bent-ly** *adv*

**super-in-di-vid-u-al** \sü-pär-'in-də-'vī-j-(ə)-wəl\, 'vī-j-əl\ *adj*: of, relating to, or being an organism, entity, or complex of more than individual complexity or nature

**super-in-duce** \-'rīn-'d(y)ūs\ *vt* [L *superinducere*, fr. *super* + *inducere* to lead in — more at INDUCE] 1: to introduce as an addition over or above something already existing 2: to bring on: INDUCE — **super-in-duc-tion** \-'dāk-shən\ *n*

**super-in-fec-tion** \-'rīn-'fek-shən\ *n*: reinfection or a second infection with the same type of parasite (as a bacterium or virus) **super-in-tend** \sü-pär-'in-tend\, 'sü-pär-m\ *vt* [L *superintendere*, fr. L *super* + *intendere* to attend, direct attention to — more at INTEND]: to have or exercise the charge and oversight of: DIRECT

**super-in-ten-dence** \-'ten-dən-(s)\ *n*: the act or function of superintending or directing: SUPERVISION **super-in-ten-den-cy** \-'dən-sē\ *n*, *pl* -cies: the office, post, or jurisdiction of a superintendent; also: SUPERINTENDENCE

**super-in-ten-dent** \-'dant\ *n* [ML *superintendens*, *superintendens*, fr. LL, prp. of *superintendere*]: one who has executive oversight and charge — **superintendent** *adj*

**super-i-or** \sü-'pī-ə-r\ *adj* [ME, fr. MF *superieur*, fr. L *superior*, compar. of *superus* upper, fr. *super* over, above — more at OVER] 1: situated higher up: UPPER 2: of higher rank, quality, or importance 3: courageously or serenely indifferent (as to something painful or disheartening) 4 a: greater in quantity or numbers < escaped by ~ speed> b: excellent of its kind: BETTER < her ~ memory> 5: being a superscript 6 a of an animal structure: situated above or anterior or dorsal to another and esp.

a corresponding part < a ~ artery> b of a plant structure: situated above or near the top of another part: as (1) of a calyx: attached to and apparently arising from the ovary (2) of an ovary: free from the calyx or other floral envelope 7: more comprehensive < a genus is ~ to a species> 8: affecting or assuming an air of superiority: SUPERCILIOUS

**superior** *n* 1: one who is above another in rank, station, or office; esp: the head of a religious house or order 2: one that surpasses another in quality or merit 3: SUPERSCRIPIT

**superior conjunction** *n*: a conjunction in which a lesser or secondary celestial body passes farther from the observer than the primary body around which it revolves

**superior court** *n* 1: a court of general jurisdiction intermediate between the inferior courts (as a justice of the peace court) and the higher appellate courts 2: a court with juries having original jurisdiction

**superior general** *n*, *pl* superiors general: the superior of a religious order or congregation

**superior-ity** \sü-'pī-ə-r-ē\, 'sü-, 'ār-\ *n*, *pl* -ties: the quality or state of being superior; also: a superior characteristic

**superiority complex** *n*: an exaggerated opinion of oneself **superior-ly** \sü-'pī-ə-r-lē\ *adv* 1: in or to a higher position or direction 2: in a higher or better manner or degree; also: in a haughty or condescending manner

**superior planet** *n*: a planet whose orbit lies outside that of the earth

**superior vena cava** *n*: the branch of the vena cava of a vertebrate that brings blood back from the head and anterior part of the body to the heart

**super-jacent** \sü-'pī-ə-jās-nt\ *adj* [L *superjacent*, *superjacent*, prp. of *superjacere* to lie over or upon, fr. *super* + *jacere* to lie; akin to L *jacere* to throw — more at JET]: lying above or upon: OVERLYING < ~ rocks>

**super-jet** \sü-'pī-ə-jet\ *n*: a supersonic jet airplane **super-lative** \sü-'pī-ə-lat-iv\ *adj* [ME *superlatif*, fr. MF, fr. LL *superlativus*, fr. L *superlatus* (pp. of *superferre* to carry over, raise high), fr. *super* + *latius*, pp. of *ferre* to carry — more at TOLERATE

**BEAR** 1: of relating to, or constituting the degree of grammatical comparison that denotes an extreme or unsurpassed level or extent 2: surpassing all others: SUPREME 3: EXCESSIVE, EXAGGERATED — **super-lative-ly** *adv* — **super-lative-ness** *n*

**superlative** *n* 1 a: the superlative degree of comparison in a language b: a superlative form of an adjective or adverb 2: the superlative or utmost degree of something: ACME 3: a superlative person or thing 4: an exaggerated expression esp. of praise

**super-lin-er** \sü-'pī-ə-lī-nər\ *n*: a fast luxurious passenger liner of great size

**super-lu-na-ry** \sü-'pī-ə-lū-nə-rē\ also **super-lu-nar** \-'nər-, 'nār\ *adj* [L *super* + *luna* moon — more at LUNAR]: more at LUNAR] the moon: CELESTIAL

**super-man** \sü-'pī-ə-mən\ *n* [trans. of G *übermensch*] 1: a superior man that according to Nietzsche has learned to forgo fleeting pleasures and attain happiness and dominance through the exercise of creative power 2: a person of extraordinary or superhuman power or achievements

**super-mar-ket** \-'mār-kət\ *n*: a self-service retail market selling foods and household merchandise

**super-nal** \sü-'pī-ə-nəl\ *adj* [ME, fr. MF, fr. L *superius*, fr. *super* over, above — more at OVER] 1 a: being or coming from on high b: ETHEREAL, HEAVENLY < ~ melodies> 2: located in or belonging to the sky — **super-nal-ly** \-'l-ē\ *adv*

**super-na-tant** \sü-'pī-ə-nāt-nt\ *adj* [L *supernatant*, *supernatans*, prp. of *supernatare* to float, fr. *super* + *natare* to swim — more at NATANT]: floating on the surface — **supernatant** *n*

**super-na-tu-ral** \sü-'pī-ə-nach-(ə)-rəl\ *adj* [ML *supernaturalis*, fr. *super* + *natura* nature] 1: of or relating to an order of existence beyond the visible observable universe; esp: of or relating to God or a god, demigod, spirit, or devil 2 a: departing from what is usual or normal esp. so as to appear to transcend the laws of nature b: attributed to an invisible agent (as a ghost or spirit) — **super-natural** *n* — **super-nat-u-ral-ly** \-'nach-(ə)-rəl-lē\, 'nach-(ə)-rəl-lē\ *adv* — **super-nat-u-ral-ness** \-'nach-(ə)-rəl-nəs\ *n*

**super-nat-u-ral-ism** \-'nach-(ə)-rəl-jī-z-əm\ *n* 1: the quality or state of being supernatural 2: belief in a supernatural power and order of existence — **super-nat-u-ral-ist** \-'l-ist\ *n* or *adj* — **super-nat-u-ral-is-tic** \-'nach-(ə)-rəl-jī-tik\ *adj*

**super-nor-mal** \sü-'pī-ə-nör-məl\ *adj* 1: exceeding the normal or average 2: being beyond normal human powers: PARANORMAL — **super-nor-mal-ity** \-'nör-mal-ə-tē\ *n* — **super-nor-mal-ly** \-'nör-mal-lē\ *adv*

**super-no-va** \sü-'pī-ə-nō-və\ *n* [NL]: one of the rarely observed nova outbursts in which the maximum intrinsic luminosity may reach 100 million times that of the sun

**super-num-er-ary** \sü-'pī-ə-n(y)ü-mə-rer-ē\, 'n(y)üm-(ə)-rē\ *adj* [LL *supernumerarius*, fr. L *super* + *numerus* number — more at NUMBLE] 1 a: exceeding the usual, stated, or prescribed number < a ~ tooth> b: not enumerated among the regular components of a group and esp. of a military organization 2: exceeding what is necessary, required, or desired 3: more numerous

**supernumerary** *n*, *pl* -ar-ies 1: a supernumerary person or thing: as a: a person employed not for regular service but for use in case of need b: an individual in excess of the number authorized for a given military or naval unit c: a person serving no apparent function 2: an actor employed to play a walk-on

a about \* kitten or further a back a bake a cot, cart  
m out ch chin e less e easy g gift i trip i life  
j joke g sing e flow o flow ol coin th thin th this  
l loot a foot y yet yū few yū furious zb vision



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